DOCUMENT RESUME

ED 215 011 UD 022 061

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TITLE The Promotional Gates Program: Mid-Year Assessment and Analysis of January, 1982 Test Results. Evaluation Report.
INSTITUTION New York City Board of Education, Brooklyn, N.Y. Office of Educational Evaluation.
PUB DATE 1 Mar 82
NOTE 72p.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Achievement Gains; Attendance Patterns; *Community Schools; Data Analysis; Elementary Education; Evaluation Criteria; *Improvement Programs; Junior High Schools; Needs Assessment; *Program Implementation; *Student Placement; Teacher Selection
IDENTIFIERS California Achievement Tests; Criterion Referenced English Syntax Test; Limited English Speaking; *New York City Board of Education; *Promotional Gates Program

ABSTRACT

This report evaluates the Promotional Gates Program for kindergarten through ninth grade implemented in thirty-two community school districts in New York City. The report is designed to provide policy makers with: (1) an assessment of student achievement on the California Achievement Test (CAT) and the Criterion Referenced English Syntax Test (CREST) administered in April and August 1981 and January 1982; (2) descriptive information about program implementation; and (3) analyses which may affect pending program design and funding decisions in the fiscal 1983 budget. Although program implementation is reported to have been completed smoothly and effectively, problems in administrative organization, pupil identification procedures, and teacher training and selection are said to need further improvement. It is suggested that errors in the placement of limited English proficient holdovers may be attributed to the inconsistent and inadequate criteria for determining who should take the CAT and who should take the CREST. Appendices include a description of the Gates curricula, definitions of the analytic groupings used in the analysis of student achievement, additional tables of student test scores by district and by grade, and an explanation of statistical adjustment of pre test scores. (Author/JCD)

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O.E.E. Evaluation Report

March 1, 1982

THE PROMOTIONAL GATES PROGRAM:

MID-YEAR ASSESSMENT AND ANALYSIS OF JANUARY, 1982 TEST RESULTS

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UD 022 061

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ACKNOWLEDGMENTS

The Office of Educational Evaluation could not have produced this report on time without the assistance of many individuals and offices within the Board of Education.

The Office of Promotional Policy, its director, assistant director, and promotional policy assistants consistently provided information and eased data collection on the Gates program. This reflects their obvious dedication to the program and children of New York City.

The Office of Student Information Services' highly accurate computer record of January test scores made the evaluation far easier than it might have been.

The computer programming services provided to O.E.E. by Chaya David and David Miller (of Software Design Associates), and Rebecca Goldstein were exemplary. These three individuals were responsible for the analytic data base used in this report. They accomplished this enormous task on a very tight time schedule.

The staff of the Board's Data Processing Center extended many courtesies to O.E.E. which helped us meet our deadlines.

Three evaluation assistants from Brooklyn College, Yevgenia Barsky, Joyce Negrin, and Alan Robinson, performed much of the data manipulation for the analyses.

The evaluation team also benefited enormously from technical and statistical assistance provided by Terry Clark (Metropolitan Educational Development and Research Project), Robert Berne (New York University Graduate School of Public Administration), and Gary Echternacht (Educational Testing Service).

The text of this report, and many previous drafts, were typed by Bea Lerner, Frances Durney, and Carole Guerra. Tables were typed by Regina Illery. Graphics were produced by April Singer and Jacqueline Wong Posner.

Finally, we would like to acknowledge the cooperation of teachers and principals who participated in all of our data collection efforts.

SUMMARY

The New York City Public Schools' Promotional Gates Program affects daily operations in more than 600 schools in 32 community school districts. Despite its administrative complexity, the Gates program was fully operational and productive by the time of the January test, just 74 school days after its inception.

Some schools required three to six weeks to make the Gates program fully operational because of class registration and materials problems. Predictably, these problems were more acute in junior high schools than in elementary schools. Because it is an innovative approach providing basic skills instruction in self-contained classes, the Gates program is prompting organizational and responsibility changes in junior high schools.

Seventy-two percent of all Gates program teachers attended summer training sessions. Their enthusiastic reaction to that training informs both their classroom behavior and their opinions about the current program.

Early student achievement measures probably underestimate the program's potential impact, but in January, 1982, 1,769 holdovers scored above mid-year promotional criteria, which were higher than end-of-year criteria. An additional 3,693 holdovers scored above end-of-year promotional criteria. Fourth-grade and seventh-grade holdovers who took the January California Achievement Test (and whose April, 1981 scores were available) made observed mean gains of six months and nine months, respectively. Regular education students, special education students, and limited English proficient students made comparable gains. Gains were similar among students in all Gates instructional programs.

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I. INTRODUCTION

The New York City Public School's promotional policy for kindergarten through grade nine students (Chancellor's Regulation A-501) was promulgated June 30, 1980; the Promotional Gates Program was implemented as part of this policy in all community school districts in September, 1981. This is the third Gates program report* prepared by the Office of Educational Evaluation (O.E.E.). It is designed to provide policy makers with: 1) an assessment of student achievement on the California Achievement Test (CAT) and the Criterion Referenced English Syntax Test (CREST) administered in April and August, 1981 and January, 1982; 2) descriptive information about program implementation; and 3) analyses which may affect pending program design and funding decisions in the fiscal 1983 city budget.

This early report probably underestimates the program's potential impact. The Gates program is a citywide effort which affects the daily operations of more than 600 schools in all 32 community school districts. It began only 74 school days before the January, 1982 test administration and the classes were not fully operational at all sites for several of those days. Student achievement in this first semester is lower than projected averages for future semesters.

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*The first report was "The Promotional Gates Program: An Analysis of Summer School Participation and August, 1981 Test Scores" (October, 1981); the second was "The Promotional Gates Program: An Assessment of Staff Training in the Exemplary Programs, August, 1981" (January, 1982). Both are available from the Office of Educational Evaluation.

This report contains four additional sections. Section II, "Program Background", highlights the major points in the new promotional policy and summarizes events leading up to the Gates program. Section III, "Program Implementation," describes program administration, staffing, and classroom and curriculum implementation. Section IV, "Analysis of January Test Results," discusses achievement rates for all Gates hold-overs, and provides a preliminary analysis of relationships between program components and student achievement. Finally, Section V, "Conclusions," summarizes major findings and indicates areas requiring future attention.

II. PROGRAM BACKGROUND

PROMOTIONAL POLICY

Promotional policy performance standards require that students receive standardized achievement test scores of not more than one year (for grades one through six) or one and one-half (for grades seven and eight) below grade level in reading and two years below in mathematics* for promotion to the next grade. The central administration enforces checkpoints or "gates" at grades four and seven and requires that children held back in these two grades be given intensive instruction (15 and 8 periods a week in language arts and mathematics, respectively) in special classes of between 15 and 20 students. Special education students are subject to these standards, individualized education plans permitting. Most of these students are mainstreamed and in resource rooms; some from self-contained classes participate in the Gates program. Bilingual students with four or more years in an English-language school system who do not meet promotional criteria, and those who have been in a bilingual program for fewer than four years and are below grade-level criteria on an English as a second language test, also participate in the Gates program.

PROGRAM START-UP

All fourth- and seventh-grade students, including mainstreamed special education students, were given the California Achievement Test

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*Implementation of performance standards for writing will begin in 1982-83. Students who failed to meet the mathematics standard alone were not held over in 1981-82, but should be receiving supplemental remedial help.

(CAT) Form D in April, 1981. Eligible bilingual students were given the Criterion Referenced English Syntax Test (CREST). Over 24,000 students with grade equivalent scores lower than 3.7 in fourth-grade and 6.2 in seventh-grade (or below CREST criteria) were classified as holdovers. Several hundred were granted individual exemptions by the Assistant Superintendent for Promotional Policy under specific promotional policy criteria. At the end of the 1980-81 school year, 23,509 students were designated Gates holdovers on the basis of the CAT.

A six-week intensive remedial program was conducted that summer. Participation was optional, and all holdover students could retake the CAT in August. Of the 15,917 holdover students who chose to retest on the CAT, 5,999 students attained the promotional criteria and were promoted.

In September, 17,510 holdover students were assigned to Gates classes taught by specially trained teachers using programs designated exemplary by the Division of Curriculum and Instruction.

The Gates classes also contain some students who are not actually holdovers. If there were fewer than 15 Gates holdovers, principals could place current fourth- and seventh-graders who might be held over in June, 1982 in Gates classes, or they could try to place holdovers in cluster schools. If the parents of holdovers refused this placement, the pupils were held over and placed in regular fourth- and seventh-grade classes and received additional services. Non-holdovers in Gates classes and holdovers in regular classrooms are identified as such in the analytic data base.

III. PROMOTIONAL GATES PROGRAM IMPLEMENTATION

The citywide Promotional Gates Program is centrally administered. Under the direction of the Deputy Chancellor for Instruction, the program is monitored by the Office of Promotional Policy (O.P.P.). Instructional support services are provided by the Division of Curriculum and Instruction. Community superintendents are responsible for implementing the program in their districts; principals are responsible for classes in their schools.

The Assistant Superintendent for Promotional Policy, head of O.P.P., is responsible for program monitoring, policy interpretation, and student exemptions. His six assistants each visit 100 to 150 schools, meeting school supervisors and district Gates "facilitators" to review problems, interpret program guidelines, and check student classroom assignments. They also visit classrooms to determine materials' availability and extent of program implementation, and to handle teachers' questions and concerns. Their site visit reports provide critical information to the assistant superintendent and the Office of Educational Evaluation (O.E.E.) on program implementation.

Each community superintendent designated a district facilitator as primary contact and resource person. Facilitators -- usually experienced teachers assigned to the district office -- spend half their time on the Gates program, particularly staff development activities. In districts with fewer Gates classes, facilitators visit classrooms regularly. School supervisors have major responsibility within a school for ensur-

ing that Gates teacher selection, student placement, and class schedules conform to Gates guidelines.

SELECTION OF EXEMPLARY/OPTIONAL PROGRAMS

Before the Gates program started, the Division of Curriculum and Instruction identified four reading programs, two writing programs,* and two mathematics programs as exemplary. These programs have been used successfully in a range of New York City community school districts. They all have reproducible program materials, manageable staff development requirements, and endorsements from district administrators and instructional personnel; all are instructionally appropriate for a broad range of urban settings. Optional programs selected by district superintendents for community school district use should meet similar criteria. All reading programs are embedded in a total language arts curriculum designed by the Division of Curriculum and Instruction or district curriculum developers.

The four reading programs -- Exemplary Center for Reading Instruction (ECRI); High Intensity Learning System (HILS-II); Learning to Read Through the Arts (L.R.A.); and Structured Teaching in the Area of Reading (STAR) -- were presented to school district superintendents for adoption. Four districts chose ECRI, four chose HILS-II, and two selected STAR for all Gates classes. Thirteen districts combined two or three programs, and eight districts received permission to implement optional, district-developed reading programs in Gates classes. One district combined

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*Writing programs were not mandated for the 1981-82 school year.

L.R.A. with a district-developed curriculum (see Table 1).

Two exemplary mathematics programs, Diagnostic Prescriptive Arithmetic (D.P.A.) and Real Math (R.M.), were presented to district superintendents. Six districts selected D.P.A. and four selected R.M. for implementation in all Gates classes; 13 districts selected D.P.A. for some Gates classes and R.M. for others. Ten districts received permission to implement optional, district-developed mathematics programs (see Table 2).

The Office of Bilingual Education developed a language arts curriculum for bilingual Gates classes. Most bilingual classes are implementing this curriculum in conjunction with exemplary or district-developed reading and mathematics programs.

See Appendix A for a brief description of each instructional program.

SELECTION OF GATES TEACHERS

Community superintendents asked principals to solicit applications from interested teachers; Gates instructors were selected from these whenever possible. Of the 1,138 teachers currently teaching Gates classes, 762 (67 percent) said they submitted an application. This was true for more fourth-grade (74 percent) than seventh-grade teachers (61 percent). Eligibility criteria are specified in the promotional policy as follows: 1) minimum three years' teaching experience; 2) demonstrated effectiveness with below standard students; 3) willingness to meet with parents and encourage involvement; 4) familiarity with a range of teaching strategies appropriate for below standard students; 5) willingness to participate in staff development sessions before and during the school year.

TABLE 1

Adoption of Reading Programs by Grade by District*

District	ECRI 4th	ECRI 7th	HILS-II 4th	HILS-II 7th	LRA 4th	LRA 7th	STAR 4th	STAR 7th	Optional Reading 4th	Optional Reading 7th
1			X				X	X		
2			X	X			X	X		
3					X		X	X		
4									X	X
5	X	X								
6			X	X	X		X	X		
7	X	X								
8	X						X	X		
9	X	X	X		X		X	X		
10									X	X
11									X	X
12									X	X
13	X	X								
14			X	X	X		X			
15			X	X						
16									X	X
17					X	X			X	X
18			X	X				X		
19			X	X						
20			X	X	X	X	X	X		
21	X	X								
22									X	X
23			X	X						
24				X			X	X		
25			X	X			X	X		
26							X	X		
27							X	X		
28	X	X	X				X	X		
29									X	X
30	X		X	X	X			X		
31									X	X
32			X	X						

*As reported by the community school districts on the District Promotional Policy Form, September 18, 1981.

TABLE 2

Adoption of Mathematics Programs by Grade by District*

District	DPA 4th	DPA 7th	RM 4th	RM 7th	Optional Math 4th	Optional Math 7th
1	X		X	X		
2	X	X	X	X		
3	X		X	X		
4					X	X
5	X			X		
6	X		X			X
7	X	X				
8			X	X		
9	X	X	X	X		
10	X			X		
11					X	X
12					X	X
13	X	X		X		
14					X	X
15	X	X				
16			X	X		
17					X	X
18					X	X
19			X	X		
20	X		X	X		
21			X	X		
22	X	X				
23					X	X
24	X	X				
25	X		X	X		
26	X			X		
27	X	X				
28	X	X	X	X		
29					X	X
30	X		X	X		
31	X	X				
32					X	X

*As reported by the community school districts on the District Promotional Policy Form, September 18, 1981.

TRAINING AND STAFF DEVELOPMENT

Teachers and supervisors received preliminary training for the Gates curricula. In July and August, 1981, the Division of Curriculum and Instruction conducted week-long training sessions in exemplary reading and mathematics programs. Districts which chose an optional reading and/or mathematics program also provided summer training. In addition, every district designed a school-year training program based on teachers' needs.

Division of Curriculum and Instruction Pre-Service Training

Gates instructional staff using exemplary curricula (1,583 teachers, school supervisors, and facilitators) received 20 hours of training for each at Norman Thomas High School during July and August, 1981.* Many teachers (especially fourth-grade teachers) received two weeks of training, to teach both reading and mathematics. Separate sessions were designed for school supervisors. Elementary school supervisors attended for one week, splitting their time equally between reading and mathematics instruction; junior high school supervisors received three days of curriculum instruction in their specialty (reading or mathematics).

Most participants were unfamiliar with these curricula. They were trained by New York City teachers who had taught the curricula; most

*An additional 189 teachers attended training sessions in September, 1981. Teachers who attended both reading and mathematics training are counted twice.

participants praised their instructors. But their evaluations expressed reservations about topic coverage.* Teachers in the STAR program thought there was too much emphasis on theoretical issues and not enough on day-to-day concerns. They requested additional assistance with lesson planning, teaching strategies, and materials selection. ECRI teachers thought training time was insufficient to prepare them for implementing specific program techniques. Many were distressed with ECRI's "overly mechanistic" approach. HILS-II teachers were most satisfied, but many wanted exposure to a HILS-II demonstration classroom. They also worried about time limitations for setting up HILS-II labs at the beginning of the school year. L.R.A. teachers were enthused by the curriculum's unusual approach, but were concerned with the lack of prepared materials.

Participants' assessment of mathematics training was generally more positive. More felt that 20 hours permitted adequate coverage of curricula, and a majority of both teachers (59 percent) and supervisors (70 percent) believed their program(s) could be effective. Despite this, only 47 percent of the teachers and 29 percent of the supervisors thought the summer training sufficiently prepared them to use the curricula. This perception was especially acute among teachers (usually fourth-grade) and supervisors responsible for implementing more than one new curriculum, and among those with teaching backgrounds not fully congruent with their new program responsibilities.

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*Evaluation forms were obtained from 1,046 (83 percent) of the teachers and 289 (89 percent) of the 324 supervisors attending these sessions.

District-Sponsored Pre-Service Training

Fourteen districts selected optional programs for instruction in reading and/or mathematics, and the Division of Curriculum and Instruction offered planning assistance for training. All sessions were held within the district and conducted by district supervisory staff. Although they were supposed to be parallel to the exemplary program training sessions, some district sessions were shorter, but not less than seven hours.

Most district programs were already in use, so many district trainees were familiar with the curriculum. Perhaps for this reason, and because trainers were frequently district colleagues, district training evaluations were slightly more positive than the citywide evaluations. On the average, 52 percent of district trainees were satisfied that the time allotted gave them sufficient curriculum preparation.

Availability of Trained Staff

Of the 1,259 teachers who trained during the summer and completed Teacher Information Forms, 908 (72 percent) are currently in the Gates program. These 908 comprise 72 percent of the 1,257 current Gates teachers. An additional 230 program teachers (18 percent) said they did not attend summer training sessions. The 119 remaining Gates teachers have not submitted Teacher Information Forms. More fourth- than seventh-grade teachers attended pre-service training: 416 (82 percent) of the 509 fourth-grade and 492 (66 percent) of the 748

seventh-grade teachers participated. Roughly similar proportions of reading (81 percent) and mathematics (77 percent) teachers participated in summer pre-service training.

Not surprisingly, teachers in 30 (17 percent) of the 179 schools visited by O.P.P. assistants between September and December, 1981 asked for or needed training. In addition to areas mentioned at the close of summer training (and discussed below), teachers requested assistance with assessment, diagnostic procedures, and instructional planning.

School-Year Training Programs

Many summer participants requested school-year training and support in specific areas. More than 130 reading teachers wanted help in assessing individual pupil progress and working with parents. At least 85 teachers requested help with record keeping, developing student test-taking, writing, reading skills in content areas, and personalizing instruction according to diagnosed needs.

In September each district submitted a design for ongoing school year training. The Division of Curriculum and Instruction suggested two-hour monthly sessions with voluntary, but strongly encouraged, participation. Each Gates staff member may be paid for 16 training hours. Fourth-grade teachers should attend at least six hours of training in both reading and mathematics. Junior high school teachers should receive all 16 hours in either reading or mathematics. Most districts also encourage non-Gates personnel to attend training sessions without pay. Although some sessions are citywide or sponsored jointly by neighboring districts, most are held within individual districts.

Training program designs filed by the districts indicate that by the end of the 1981-82 school year, all teachers will have received Gates training. But the programs may not be addressing all teachers' needs. For example, only 13 districts have planned sessions on parental involvement, although teachers identified this as a high training priority. Each district is providing at least six hours of training on reading topics, but only 18 have planned at least 16 hours of supplemental instruction for junior high school teachers. Eighteen districts are also offering at least six hours of supplemental mathematics training, but only five have provided 16 hours.

Division of Curriculum and Instruction staff have conducted at least half of this training. The division also provides a telephone "hot-line" for teachers and parents and a weekly radio program, "Gates Update," in which experts present pertinent program information and answer listeners' questions.

CLASSROOM IMPLEMENTATION ISSUES

The Office of Promotional Policy, which monitors the Gates program, is a major source of information about the program's implementation. Given the scope and complexity of this new program, O.P.P. anticipated that problems would arise early in the school year. With a view toward timely identification and resolution of these problems, O.P.P. sent assistants to 179 schools (28 percent of the 641 participating schools) in 30 districts by December, 1981. Thirty of these schools were visited more than once. Priority was given to those sites

at which difficulties were either expected or reported. Because the assistants' function was to pinpoint program implementation problems for early correction, their observations were not entirely balanced, nor were they intended to be. O.E.E. will be conducting a more systematic evaluation of program implementation in the spring.

After reviewing the site visit reports and interviewing O.P.P. staff, the evaluation team delineated four types of problems which occurred at some schools during the first few months of the program's operation: delays in program initiation; lack of Gates instructional materials; scheduling difficulties; and problems in classroom management.

Program Initiation

Teachers and O.P.P. assistants reported that it sometimes required from three to six weeks for Gates classes to become fully operational. Some delays resulted from inappropriate placement, due to missing test scores or misinterpretation of Gates policy on potential holdovers. Others stemmed from over- or under-enrollment, teacher shortage or turnover, or occasional inclusion of non-program students in the relatively small Gates classes when regular classroom teachers were absent and substitutes had not been obtained. Some schools were reluctant to create an additional Gates class because of expected attrition from the program.

Availability of Materials

The problem most frequently observed at Gates sites was missing

assessment or curriculum materials. Forty schools (22 percent of those visited) did not have a full complement of essential or supplemental materials. Some teachers trained in the diagnostic-prescriptive approach were uncertain how to proceed when assessment materials were missing.

Classroom Schedules

Most classes were found to be fulfilling the Gates requirement of 15 periods of language arts and eight periods of math instruction per week. In the more crowded junior high schools, principals were sometimes unable to assign a Gates class its own room, to schedule every period in the same place, or to assign a single teacher to all 15 periods of reading.

Classroom Management

Planning and record keeping are fundamental to the diagnostic-prescriptive approach. While most teachers have specified instructional objectives in their lesson plans and have maintained achievement profiles for students, others have found these tasks too burdensome.

CLASSROOM OBSERVATIONS

Despite the early problems observed at some Gates sites, the O.P.P. assistants reported that the exemplary reading programs were well implemented in most classrooms by December, 1981. In order to describe this level of implementation, the evaluation team asked administrators of each of the four exemplary programs to identify an example of effective program implementation. A member of the evaluation team (experi-

enced in classroom observations) visited the four identified classes during December, 1981.

At each site, the school supervisor was highly supportive of the program and the teacher. Each teacher was receiving ongoing training, and was implementing the exemplary program as designed. Although each classroom was distinctly different from the other three, each reflected the underlying structure of the specific program, and a sense of the teacher's and students' security within that structure. In each classroom, productive learning was taking place.

ECRI. To a greater extent than other reading approaches, ECRI demands that the teacher learn and become adept at a variety of specific teaching behaviors. To be fully effective, the teacher must reach a high level of proficiency and speed in conducting ECRI lessons. The Gates teacher in this classroom was still learning the ECRI approach; although she followed ECRI protocols, her delivery of ECRI cues was relatively slow. She was able to focus only on one group at a time while the other students worked independently. Consequently, the rich variety of pupil activity possible within the ECRI classroom was not observed.

Nevertheless, both the teacher and the students were proud of the progress that was being made. The teacher used the prescribed ECRI directions and corrections and was encouraging and supportive in the prescribed ECRI manner. The students responded individually or collectively as directed. Their responses demonstrated understanding of the lesson content and ease with ECRI methods.

HILS-II. The Gates teacher in this class had prior experience with HILS-II in a reading lab, and was implementing the approach fully and fluently. The school had supplemented the HILS-II materials supplied by the program, so an extensive array of materials was available. The classroom was functionally arranged for group and individual work.

Students worked on individual prescriptions while the teacher held one-to-one conferences or instructed two or three students at a time. Most students were able to work independently and productively with little supervision. Students seemed proud of their ability to carry out individual prescriptions and were eager to demonstrate their progress to the teacher. Only one student was unable to maintain a desirable level of participation without repeated prompting.

L.R.A. An artist-teacher and a classroom teacher together had developed a stimulating environment by displaying children's art and writing as well as teacher-made materials. The classroom allowed for flexible grouping patterns. Students could work independently in centers for recreational and content-area reading, reading skills development, and creative writing.

The classroom teacher remained in the room during the artist-teacher's lesson to observe and assist students. Students and teachers participated enthusiastically. Students read, with interest and apparent comprehension, materials prepared by both teachers which were based on class experiences, and which contained sophisticated concepts and vocabulary.

STAR. This veteran teacher had no prior experience in STAR methodology, but appeared to be comfortable with the approach. The room's arrangement and displays and the activities of the class reflected STAR's philosophy and methods. The lesson began with a review of STAR strategies in which all students took part; developmental lessons were then presented to smaller groups while other pupils worked independently on skill reinforcement exercises.

In the lesson, vocabulary and concepts were developed orally. Students were guided to make predictions about the plot of a story which they then read avidly. Students competed for an opportunity to recount the story and to answer questions that called for reasoning. The interest and enthusiasm demonstrated in this classroom were remarkable.

SUMMARY

It is clear that the Gates program is being implemented throughout the system; undoubtedly, it is more successfully implemented at some sites than at others. A complex administrative organization is functioning and basic programmatic elements are in place. Central offices with primary responsibility for organization and monitoring of the program, selection of instructional programs, and staff development have provided services and extended them on the basis of identified needs. Districts have exercised their responsibilities for selection of teachers and instructional programs, and for providing in-service training and day-to-day supervision of the program.

Problems were expected in initiating this complex program. As these problem areas have been identified, decisive actions have been taken. The most frequently reported problems have involved the establishment of class registers, the availability of materials, classroom record keeping, and scheduling of classes in the junior high schools. The Gates program is having particular impact on junior high schools which have traditionally been organized around instruction in content areas with students moving from class to class. The Gates program, by providing basic skills instruction in self-contained classes, is causing changes in school organization and rethinking of responsibilities.

Classroom observations confirm that teachers in classrooms are implementing Gates curricula as designed. When well implemented, these curricula are impressive indeed. Even with generally experienced teachers, however, full implementation of these curricula will take time.

The reaction of teachers in the program is generally favorable. Teachers who participated in summer training were enthusiastic about the quality of the preparation they were given but insecure about their ability to implement the curricula. They were concerned about the degree of support they would receive during the year. Informally, teachers have reported receiving this support. As one Gates teacher stated at a recently held citywide Gates conference, "You really came through. This time you didn't let us down."

IV. ANALYSIS OF JANUARY, 1982 TEST RESULTS

This section of the report presents data from the January, 1982 administration of the California Achievement Test (CAT)* and the Criterion Referenced English Syntax Test (CREST). Test scores are analyzed in three ways.

First, results are presented for the 12,079 holdovers who took the January CAT and for whom the Office of Educational Evaluation has valid test scores from either April or August, 1981. Results are also presented for Gates holdovers who took the January CREST. At the outset it is important to note that 4,903 students who took the January CAT have been excluded from the analysis because either they have no April or August test score on record (3,624 students), or they have a recorded April or August test score which is above the promotional criteria (1,279 students). The disposition of the January CAT answer documents, the results for students not included in the main analytic file, and the composition of the various analytic groupings are described in Appendix B.

The second type of analysis looks at citywide gains in student achievement for 11,362 Gates holdovers with both April and January CAT scores, and 717 additional holdovers with both August and January (but not April) scores.

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*CAT Form D was given in January, 1982 and April, 1981; Form C was given in August, 1981. Throughout the testing sequence, fourth- and seventh-grade holdovers took Levels 14 and 17, respectively.

Finally, a more detailed series of analyses are presented. Holdovers' gains in each exemplary program are discussed, as are the gains of special education and limited English proficient Gates students. The relationships between attendance and achievement and between pretest and post-test scores are also observed.

JANUARY CAT RESULTS

The January, 1982 test was given to provide information 1) about the progress of all Gates students, and 2) needed to help individual pupils achieve the end-of-year promotional standards. The test also provided Gates holdovers with an opportunity for mid-year promotion. However, the desire to reward outstanding achievement was tempered by the realization that students promoted mid-year would face a difficult situation in their new grades. They would lack much of the subject-area content presented in the first semester of the fifth- or eighth-grade and would encounter promotional criteria once again at the end of the school year. The January promotional cut-offs were therefore set at higher levels than those for April to ensure that holdovers promoted mid-year would be prepared to meet the new fifth- and eighth-grade criteria at the end of the year. In January, a fourth-grade holdover had to achieve a grade equivalent of 4.5 for promotion to the fifth-grade; a seventh-grade holdover was required to achieve a grade equivalent of 7.1 for promotion to the eighth grade. The April criteria for holdovers in the Gates program are set at 3.7 and 6.2.

Table 3 presents January CAT results for holdovers in terms of both the mid-year and April criteria. A total of 1,757 Gates holdovers scored above January promotional cut-offs. This is a remarkable achievement for these individual students. It represents a gain since April, 1981 of at least nine months (for fourth-graders) and 10 months (for seventh-graders).

A greater percentage of seventh-grade holdovers (18.5 percent) than fourth-grade holdovers (8.8 percent) met the January cut-off. In part, this is due to the non-equivalence of the two criteria. The fourth- and seventh-grade cut-offs are set at the fifty-second and forty-seventh percentiles, respectively. One would therefore expect more seventh-graders to meet these criteria.* However, in terms of the April cut-offs, which are set at substantially equivalent percentiles for both grades, a greater proportion of fourth-graders scored above the promotional criteria.

In addition to those students who scored above the January promotional criteria, 3,672 Gates holdovers scored above the end-of-year criteria. These students should meet the promotional criteria when tested again in April, 1982. A total of 5,429, or 45 percent, of all Gates holdovers scored above the April promotional criteria at mid-point in the program. Figures 1 to 3 show what has happened to the original June, 1981 cohort of 23,509 holdovers.

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*Even so, if the same percentile cut-off (i.e., either the forty-seventh or fifty-second) had been used for both grades, a slightly greater proportion of seventh-grade holdovers would have met the January promotional standard.

TABLE 3

Results of January, 1982 CAT in Terms
of Mid-year and April Promotional Criteria

Grade	Number of Holdovers with January Test Scores	January Promotional Criteria G.E.	%tile	Students Scoring Above January Promotional Criteria #	%	April Promotional Criteria G.E.	%tile	Students Scoring Below January but Above April Criteria #	%	Total Holdovers Scoring Above April Promotional Criteria #	%
Four	4,912	4.5	52	431	8.8%	3.7	31	1,955	39.8%	2,386	48.6%
Seven	7,167	7.1	47	1,326	18.5%	6.2	34	1,717	24.0%	3,043	42.5%
Total	12,079	--	--	1,757	14.5%	--	--	3,672	30.4%	5,429	45.0%

FIGURE 1

January, 1982 Status of Original June, 1981 Fourth-Grade Holdovers

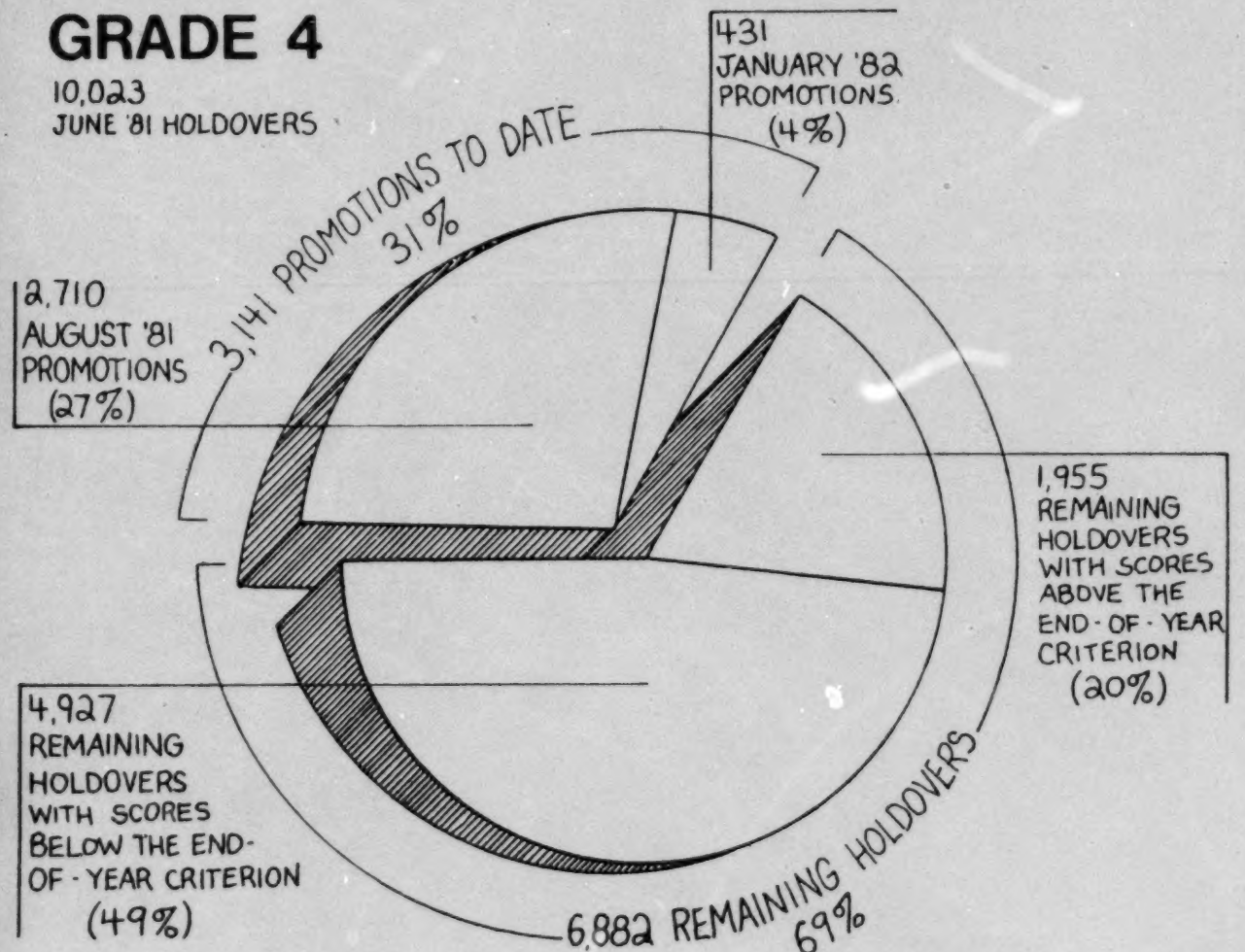

FIGURE 2

January, 1982 Status of Original June, 1981 Seventh-Grade Holdovers

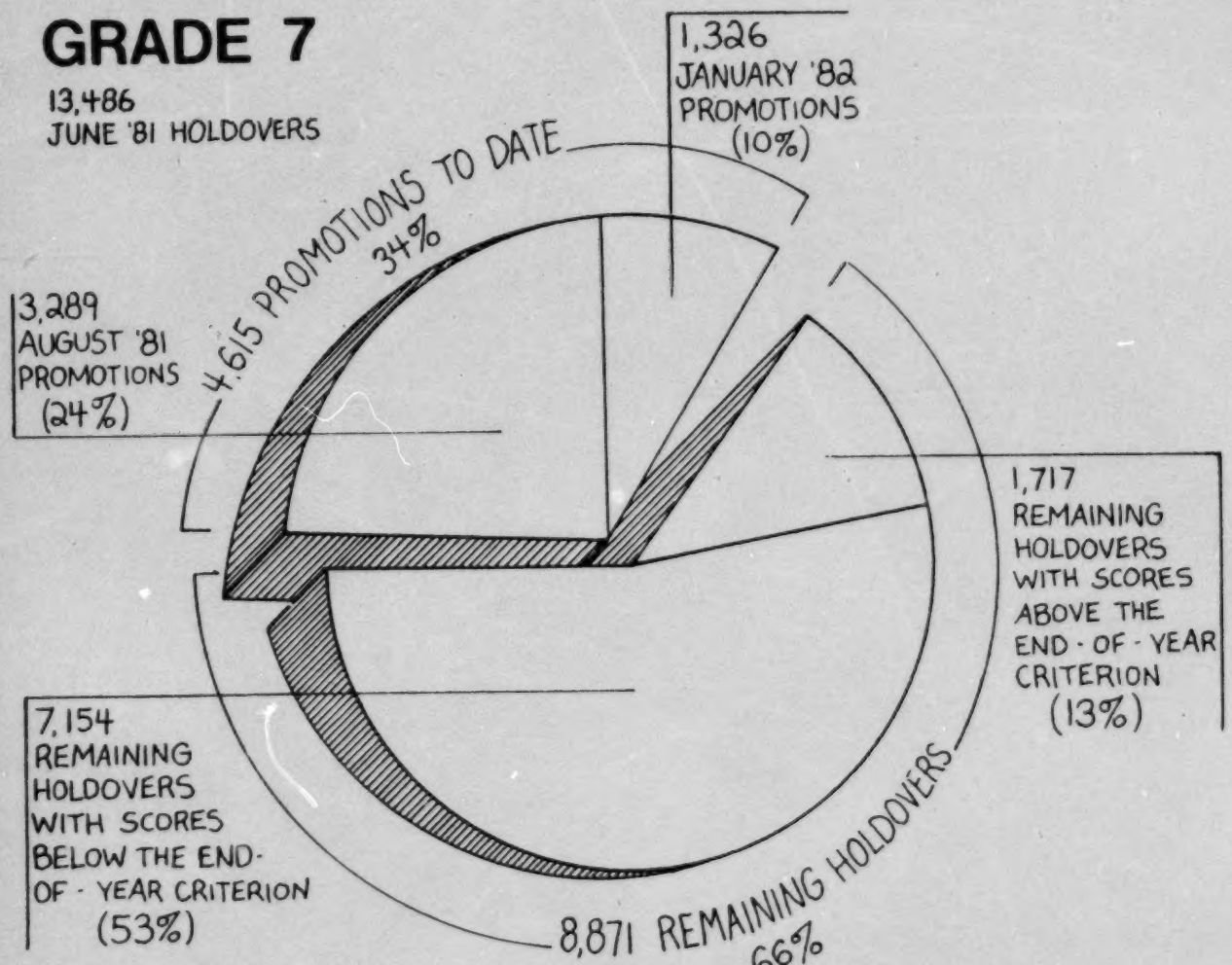

FIGURE 3

January, 1982 Status of Original June, 1981 Fourth- and Seventh-Grade Holdovers

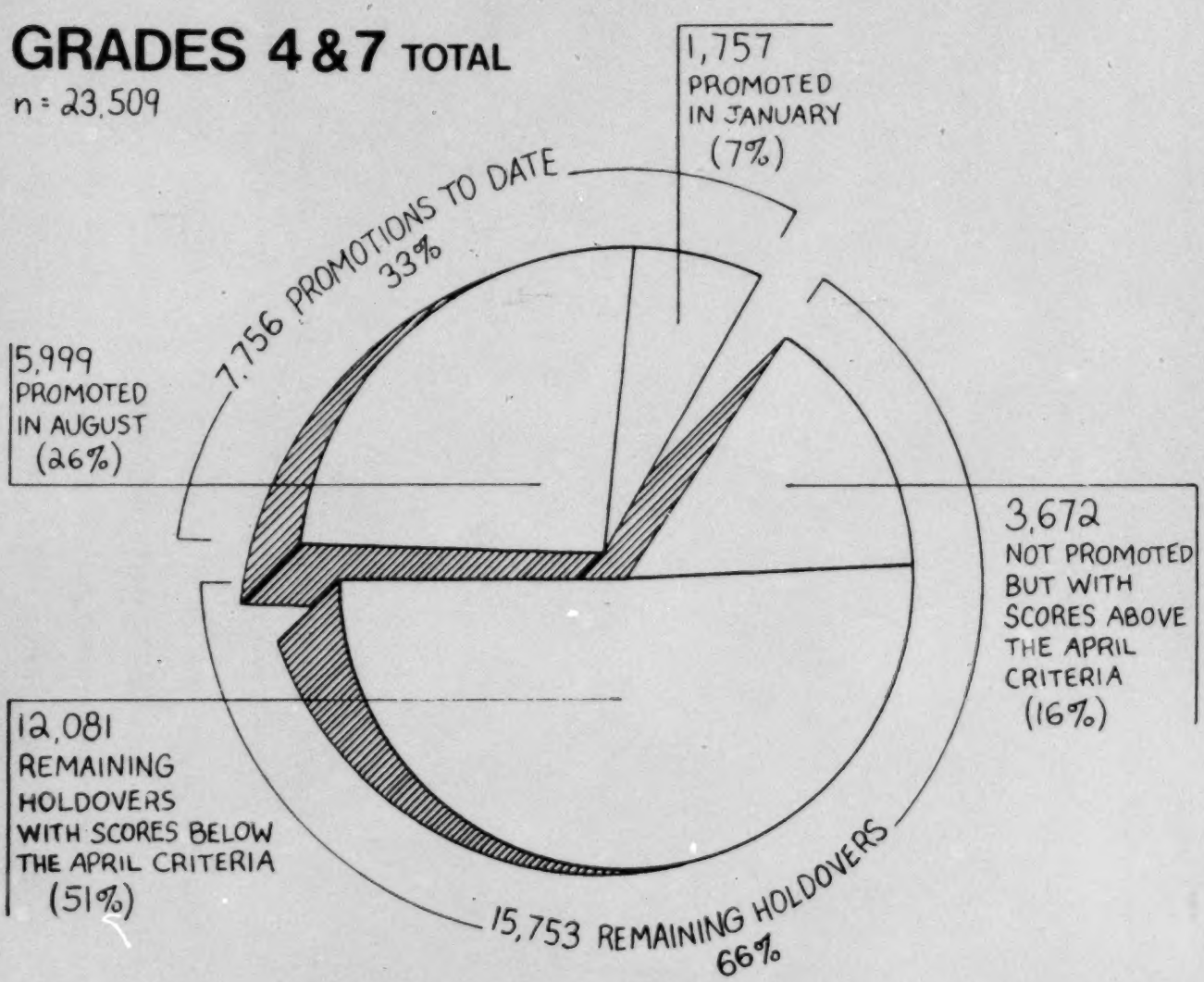

Table 4 shows January CAT scores distributed in relation to April promotional criteria. There are three months of instruction between the January and April, 1982 administrations of the CAT. There are 1,767 holdovers (909 fourth-graders and 858 seventh-graders) already within three months of the April promotional criteria. On the other hand, 4,883 holdovers are more than three months below the April cut-offs. Of greatest concern are the 2,422 seventh-grade and 834 fourth-grade holdovers who remain more than nine months below the April promotional criteria. Figures 4 and 5 show January CAT scores distributed for grades four and seven, respectively.

The number and percentage of holdovers scoring above January and April promotional criteria, by district, are presented in Appendix C, Tables C-1 and C-2, respectively. These data should be interpreted cautiously. Inter-district comparisons are complicated by differences in the distribution of pre-test scores within each district.

JANUARY CREST RESULTS

The January, 1982 CREST administration produced 221 answer documents. The Office of Promotional Policy matched 69 of these answer documents to previous (April or August, 1981) valid CREST scores. Table 5 displays CREST results for the 69 holdovers. Ten (16.4 percent) fourth-graders and two (25.0 percent) seventh-graders scored above the January promotional criteria. Comparable figures for April promotional criteria are 26 (42.6 percent) and seven (87.5 percent), respectively.

TABLE 4

Distribution of January, 1981 CAT Scores
in Relation to April Promotional Criteria

Grade	Grade Equivalent*	Percentile Rank**	Holdovers #	Holdovers %
Four				
	3.7 and above	20 and above	2,386	48.6%
	3.4 to 3.6	14 to 18	909	18.5
	3.0 to 3.3	9 to 12	783	15.9
	2.7 to 2.9	6 to 8	389	7.9
	below 2.7	below 6	445	9.1
			4,912	100%
Seven				
	6.2 and above	24 and above	3,043	42.4%
	5.9 to 6.1	21 to 23	858	12.0
	5.5 to 5.8	17 to 20	844	11.8
	5.2 to 5.4	14 to 16	408	5.7
	below 5.2	below 16	2,014	28.1
			7,167	100%

*Scores are expressed as grade equivalent units. The unit of measurement is one year; months are expressed as tenths of a unit.

**Percentile ranks apply to the beginning of the fifth- and eighth-grades.

FIGURE 4

Distribution of January, 1982 CAT Scores for Fourth-Grade Holdovers

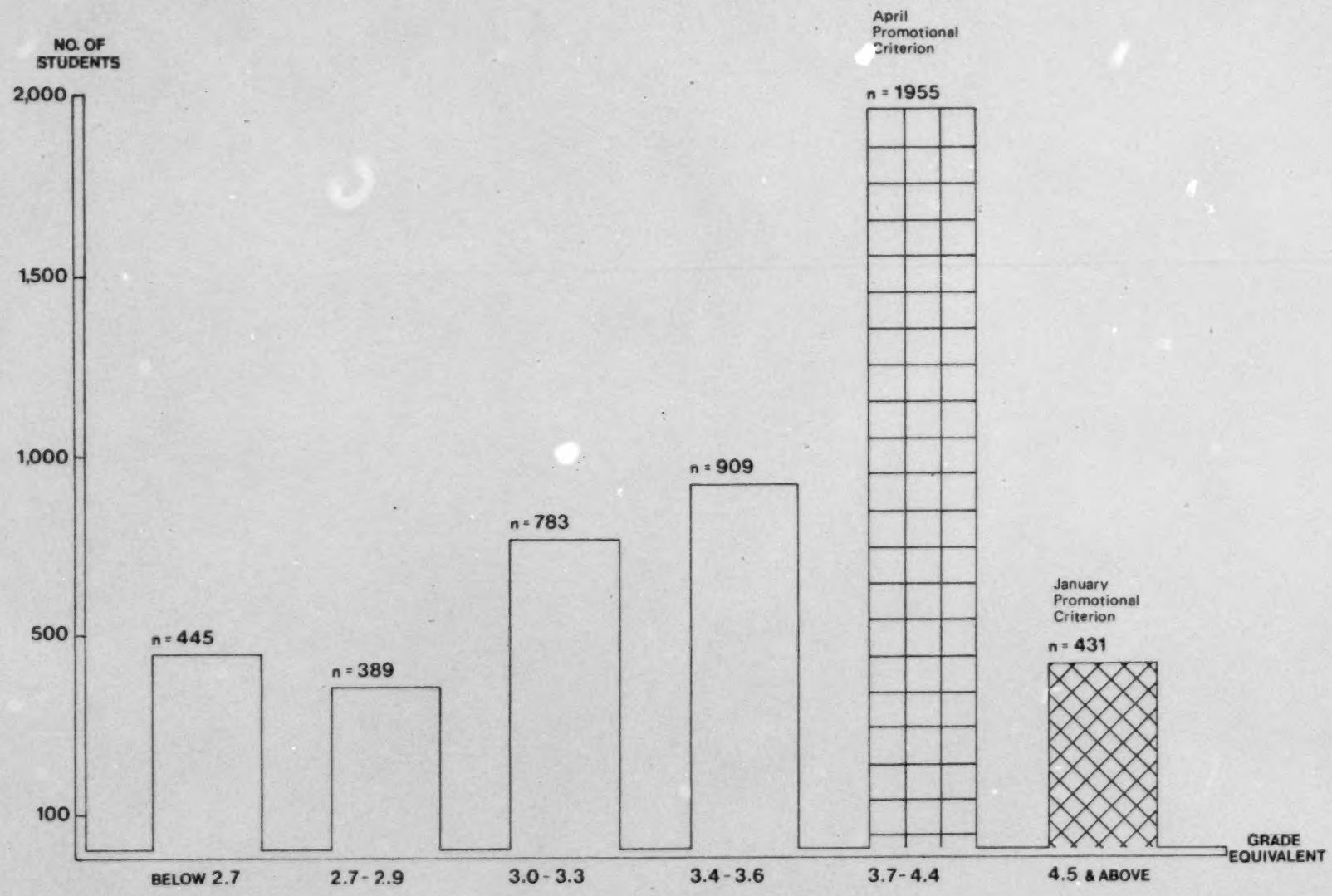

FIGURE 5

Distribution of January, 1982 CAT Scores for Seventh-Grade Holdovers

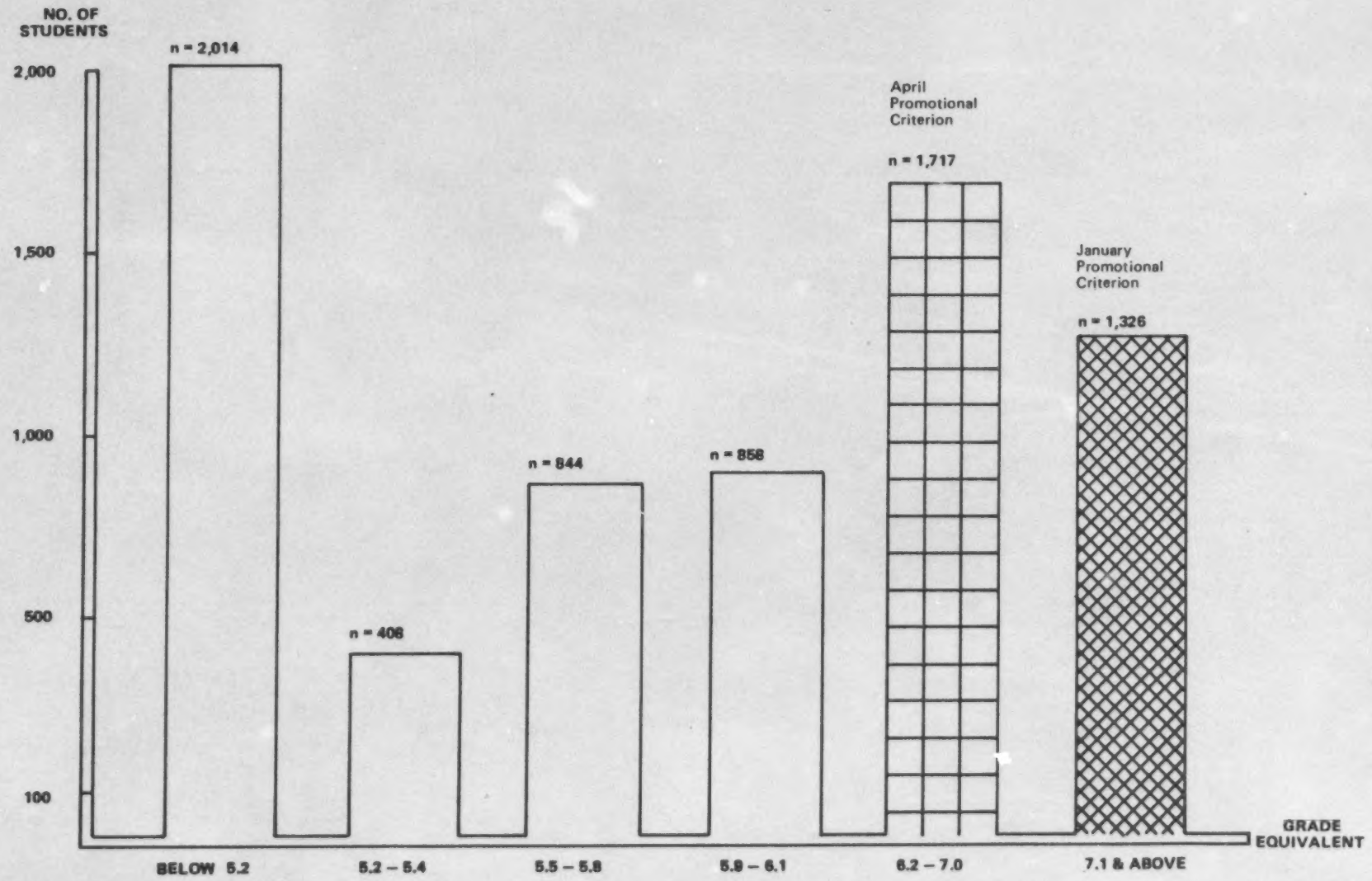

TABLE 5

January, 1982 CREST Results

Grade	Number of Holdovers with January and Pre-test CREST Scores	Students Scoring above January Promotional Criteria		Students Scoring above April Promotional Criteria	
		#	%	#	%
Four	61	10	16.4%	26	42.6%
Seven	8	2	25.0%	7	87.5%
Total	69	12	17.4%	33	47.8%

ANALYSIS OF STUDENT ACHIEVEMENT GAINS

Citywide Gains from April to January

The analysis of citywide student achievement gains for 11,362 holdovers who took both the April, 1981 and January, 1982 CAT, is shown in Table 6. Fourth- and seventh-grade holdovers achieved mean gains of six and nine months, respectively. The mean gains achieved in both grades for each district are displayed in Appendix C, Table C-3.

When students, such as Gates holdovers, are selected for participation in a remedial program because they score below a cut-off on a standardized test, and the same test is used again to gauge the group's achievement in the program, that measurement is subject to statistical error. Because of this error, the group's mean gain will increase, regardless of instructional intervention. This well-documented tendency is referred to as "regression to the mean" or "the regression effect."*

There are many ways to account for the regression effect in educational program evaluation. In the end-of-year report on the Gates program, the gains of students in a comparison group, and the performance of Gates holdovers in three districts on the Degrees of Reading Power Test, will be analyzed. Both of these approaches will allow a better understanding of the regression effect and more definitive statements about Gates program impact on student achievement.

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*See "E.S.E.A. Title I Evaluation and Reporting System," RMC Research Corp., February, 1981, Revised for further information about the regression effect.

TABLE 6

Gains of Holdovers with April, 1981
and January, 1982 CAT Scores

Grade	Number of Holdovers with Matched Scores*	Mean Grade Equivalent**
Grade Four		
April, 1981	4,545	3.0
January, 1982	4,545	3.6
Mean Gain	4,545	0.6
Grade Seven		
April, 1981	6,806	5.0
January, 1982	6,806	5.9
Mean Gain	6,806	0.9

*These are the 11,362 holdovers having both April, 1981 and January, 1982 CAT scores.

**Mean scores and gains are expressed in grade equivalent units. The unit of measurement is one year; months are expressed in tenths of a unit.

For this mid-year report, there is only one methodology available for estimating the extent of the regression effect. It is a statistical adjustment of Gates holdovers' pre-test (April, 1981) scores. The formula's application results in adjusted mean gains of two months in the fourth-grade and four months in the seventh-grade. It estimates that four and five months of the observed gains in the fourth- and seventh-grades, respectively, are actually attributable to the regression effect.*

Due to particular aspects of testing in the Gates program, this statistical adjustment may be as error-prone as calculating observed gains . Statistical adjustment of pre-test scores is based on a theoretical model which cannot account for the repeated (more than twice) testing and promotion of holdovers in the Gates program. The model is suited to a simple test-retest situation in which all program participants are retested. In the Gates program, 5,999 holdovers were promoted in August and were therefore not tested in January. The effect of August promotions on the validity of the statistical adjustment is not known; they may cause the adjustment to overestimate the regression effect.

However, even this most conservative methodology results in a commendable adjusted gain in the first semester of program implementation. The true gain in student achievement will be much clearer at the end of the school year, but the full program effect will not be

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*See Appendix D for a discussion of the statistical adjustment of pre-test scores to account for regression to the mean.

known until participants' progress is tracked through subsequent school years.

Comparison of August CAT to January CAT

Only 717 holdovers have both August and January CAT (but not April) scores. Gains for these holdovers are displayed in Table 7. The observed gains are five and nine months in fourth- and seventh-grade, respectively. An adjustment for regression cannot be performed because a citywide test was not given in August, so a citywide mean for August is not available.

Gains of Holdovers Scoring Above and Below April Criteria

The differences in gains from April to January between those students who scored above the end-of-year promotional criteria and those who did not are presented in Table 8. Fourth-graders scoring below 3.7 in January had mean gains of two months, while those scoring 3.7 or above had mean gains of 11 months. Similarly, seventh-grade holdovers who scored below 6.2 had mean gains of two months while those scoring 6.2 or above had mean gains of 18 months. This indicates that holdovers who attained the end-of-year promotional criteria are making substantial progress; those who have not yet attained the end-of-year standards are making much less progress.

The distribution of pre-test scores for holdovers achieving January and end-of-year promotional standards is presented in Appendix C, Tables C-5 and C-6. Although many of the high-achieving holdovers in January had pre-test scores close to the cut-off, many

TABLE 7

Gains of Holdovers with August, 1981 and January, 1982 (but not April, 1981) CAT Scores

Grade	Number of Holdovers with August & January Scores*	Mean Grade Equivalent**
Grade Four		
August, 1981	366	3.0
January, 1982	366	3.5
Mean Gain	366	0.5
Grade Seven		
August, 1981	351	4.9
January, 1982	351	5.8
Mean Gain	351	0.9

*These are the 717 holdovers who lack April, 1981 scores but have both August, 1981 and January, 1982 scores.

**Mean scores and gains are expressed in grade equivalent units. The unit of measurement is one year; months are expressed as tenths of a unit.

TABLE 8

January, 1981 CAT Mean Gains of Holdovers Scoring Above and Below End-of-Year (April) Promotional Criteria

Students Scoring Above April Promotional Criteria in January

Grade	Number with April and January Scores	Mean April Grade Equivalent*	Mean January Grade Equivalent*	Mean Gain*
Four	2,229	3.1	4.2	1.1
Seven	2,894	5.3	7.1	1.8

Students Scoring Below April Promotional Criteria in January

Grade	Number with April and January Scores	Mean April Grade Equivalent	Mean January Grade Equivalent	Mean Gain
Four	2,316	2.9	3.1	0.2
Seven	3,912	4.8	5.0	0.2

*Mean scores and gains are expressed as grade equivalents. The unit of measurement is one year; months are expressed as tenths of a unit.

did not. Specifically, half of the fourth-grade holdovers who scored above 3.7 in January had pre-test scores above 3.1; the remaining half had lower pre-test scores dispersed over a wide range. Similarly, of the seventh-grade holdovers who scored above 6.2 in January, 46 percent had pre-test scores above 5.7; the remaining 54 percent had lower pre-test scores dispersed over a wide range.

The pre-test scores of holdovers scoring below the end-of-year criteria in January showed a more even distribution in both grades. There is clearly variation in the amount of pre- to post-test improvement shown by holdovers scoring at low levels in January.

Success in the Gates program is not just being achieved by holdovers with high pre-test scores. The data show enough variation to indicate success among holdovers at all pre-test score levels.

ANALYSIS OF PROGRAM VARIABLES

Relationship Between Attendance and Achievement

Attendance in the Gates program is comparable to attendance in fourth- and seventh-grades, citywide. Fourth-grade Gates holdovers had an average attendance of 91 percent through January, the same as the citywide average for all fourth-graders in 1980-81. Seventh-grade Gates holdovers had an average attendance of 84 percent, one percent lower than the citywide average for seventh-graders in 1980-81.

Gates holdovers in both grades attended classes regularly. The majority were absent no more than five days prior to the January test. Their attendance did not vary much among the different exemplary

instructional programs, but seventh-graders attended less frequently than fourth-graders. There is a small positive correlation between the number of days attended and January test scores.* Since students' performance on the January test is also correlated with April, 1981 test scores,** an analysis was conducted to isolate the effects of attendance from pre-test scores. The analysis suggests that attendance makes a contribution to January test performance which is distinct from that of pre-test score.†

Instructional Program Gains

Table 9 shows the mean pre- and post-test performance of holdovers in different instructional programs.†† In both grades and across all programs, holdovers showed positive improvement. The mean gains for fourth- and seventh-grade were six and nine months, respectively. Students in the "no program" category (i.e., those in schools which had too few holdovers to form a Gates class) receive individual remedial services. They are not a comparison group and their perform-

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*In fourth-grade, $r=.09$ ($p<.001$); in seventh-grade, $r=.12$ ($p<.001$).

**In fourth-grade, $r=.05$ ($p=.001$); in seventh-grade, $r=.03$ ($p<.05$).

†In fourth-grade, pre-test beta = .22 ($F=211.6$) and attendance beta = .08 ($F=31.5$); in seventh-grade, pre-test beta = .31 ($F=667.1$) and attendance beta = .12 ($F=94.8$).

††Test results for District 17 are reported separately, under Learning to Read through the Arts, which is embedded in a language arts curriculum developed by the district.

TABLE 9

Analysis of Gains of Holdovers in Each Reading Program

Grade	Reading Program	Number of Holdovers with April and January Scores	April Mean G.E.*	January Mean G.E.*	Mean Gain*
Four	ECRI	728	2.9	3.5	0.6
	STAR	1,021	3.0	3.6	0.6
	LRA	134	2.9	3.5	0.6
	LRA - Dist. 17	244	3.0	3.6	0.6
	HILS II	1,179	3.0	3.7	0.7
	Optional	1,056	3.0	3.6	0.6
	All Programs	4,362	3.0	3.6	0.6
	No Program**	183	3.0	3.6	0.6
Seven	ECRI	998	5.1	5.9	0.8
	STAR	1,778	5.0	6.0	1.0
	LRA	31	4.9	5.5	0.6
	LRA - Dist. 17	469	5.0	5.9	0.9
	HILS II	1,840	5.0	5.8	0.8
	Optional	1,590	5.0	5.9	0.9
	All Programs	6,706	5.0	5.8	0.8
	No Program**	100	5.0	5.5	0.5

*Mean scores and gains are expressed as grade equivalents. The unit of measurement is one year; months are expressed as tenths of a unit.

**"No program" indicates schools in which there were too few holdovers to form a Gates class. Holdovers in these schools are in "regular" fourth- and seventh-grade classes, but receive additional remedial services during the day.

ance cannot be used to measure the effectiveness of the instructional programs. In the end-of-year report, the achievement of a bona fide comparison group will be analyzed, and only then will the relative effectiveness of the instructional programs be fully understood.

Gains Made by Regular, Special, and LEP Holdovers

Achievement gains made by regular education, special education and limited English proficient (LEP) holdovers are shown in Table 10. Holdovers in all three groups made gains. Special education (resource room) students achieved the greatest gains -- eight and eleven months in fourth- and seventh-grade, respectively. However, the individualized education plans of many resource room children require that they be tested under modified conditions. Although the extent or effect of these modifications on their test scores is unknown, their gains in the Gates program are impressive.

Limited English proficient holdovers gained four and six months in fourth- and seventh-grade, respectively. These gains are similar to those of regular education holdovers.

Detailed information about the classroom placement and instructional strategies for limited English proficient and resource room holdovers is not available at this time. The Office of Educational Evaluation will collect more complete information on these students in April.

TABLE 10

Achievement Gains for Regular, Special Education, and LEP Holdovers

Grade	Regular Education Students		Special Education Students		LEP Students	
	Number of Holdovers	Mean G.E.*	Number of Holdovers	Mean G.E.*	Number of Holdovers	Mean G.E.*
Grade Four						
April, 1981	3,927	3.0	417	2.9	201	2.9
January, 1982	3,927	3.6	417	3.7	201	3.3
Mean Gain	3,927	0.6	417	0.8	201	0.4
Grade Seven						
April, 1981	6,222	5.0	271	5.1	313	4.8
January, 1982	6,222	5.9	271	6.2	313	5.4
Mean Gain	6,222	0.9	271	1.1	313	0.6

*Mean gains are expressed as grade equivalents. The unit of measurement is one year; months are expressed as tenths of a unit.

Relationship Between August Testing and Achievement Gains in January

A total of 6,107 students tested in January were also tested in August.* There are slight differences in the performance of August test takers and non-August test takers, but only in seventh-grade. Seventh-grade holdovers tested in August made a one-year mean gain from April to January, all of which occurred between August and January. Seventh-grade students not tested in August made a mean gain of seven months from April to January. In the fourth-grade, both groups of students made mean gains of six months.

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*The data base for this report does not allow a separation of holdovers who attended the summer Gates program from those who did not, but simply took the August test. The latter group accounted for less than four percent of August test-takers.

V. CONCLUSIONS

PROGRAM IMPLEMENTATION

Compared to other system-wide New York City Public School program implementations, the Gates program is proceeding smoothly and productively. A remarkable degree of thought, talent, and effort is evident at all levels of program participation. The program is having an impact on daily classroom and school operations, and students are learning.

Many inevitable educational and organizational problems -- including materials availability and class register difficulties -- have been solved, but some problems persist. Administrative organization, pupil identification procedures, and teacher selection and training require further attention.

Administrative Organization

Although the Gates program's administrative structure was mobilized quickly and effectively, there were overlapping or unclear responsibility assignments at the central, district, and school levels. For example, several central offices have sent independent, conflicting communications concerning the same issue.

There is confusion in the districts regarding the roles of O.P.P. assistants, district facilitators, and school supervisors. O.P.P. assistants are qualified administrators and supervisors, but they have had to spend most of their time on program monitoring and resolving class register difficulties. District facilitators may not be devoting adequate time to the Gates program due to competing responsibilities.

Finally, there is confusion in the schools regarding the relationship between district facilitators and school supervisors.

Pupil Identification Procedures

Identification and placement of Gates students continues to be troublesome, mostly because there was no central machinery for these operations until after the first April, 1981 eligibility test.

Identification of limited English proficient holdovers has been confusing because of inadequately defined and inconsistently applied definitions of who should take the CAT and who should take the CREST. Complicating this situation is the fact that pupil records frequently lack information about length of time in an English language school system. As a result of these problems, placement of limited English proficient holdovers has been subject to considerable error. Of those limited English proficient-holdovers originally tested with the CAT and the CREST in April, 1981, only one-third and one-half, respectively, were identified as such on the January, 1982 tests.

Teacher Selection and Training

Some Gates teachers have no experience teaching reading and/or mathematics, a problem more prevalent in junior high schools than in elementary schools. Furthermore, some Gates teachers received no program training prior to teaching Gates classes.

STUDENT ACHIEVEMENT

Considering time lost resolving practical classroom implementation problems, student achievement in the initial period probably under-

estimates the program's potential impact. Even so, 1,769 holdovers (14.5 percent) scored above January promotional criteria, and 5,462 holdovers (45 percent) scored above end-of-year criteria. Fourth- and seventh-grade holdovers achieved mean gains of six months and nine months, respectively. Students across the whole spectrum of pre-test scores are benefiting from the Gates program, and special education, limited English proficient, and regular education students are making comparable gains. Program attendance parallels citywide averages for all fourth- and seventh-graders, and at mid-year, pupil achievement in each of the instructional programs is similar.

Appendix A

DESCRIPTION OF GATES CURRICULA

EXEMPLARY READING PROGRAMS

All of the exemplary reading programs have been used successfully in New York City public schools, and as Title I remedial programs. In addition, ECRI, HILS-II and L.R.A. have been validated by the United States Department of Education.

Each program is based on a major, current learning theory. Each specifies pupil behaviors for development and supportive teacher behaviors. Verbal and behavioral pupil response is critical, as are teacher expertise and enthusiasm.

Exemplary Center for Reading Instruction

This total language arts curriculum uses a multi-sensory approach, eliciting specific verbal responses through precise directions, corrections, and praise (prompts) to maximize attention, retention, accuracy, and comprehension. In word recognition lessons, pupils hear and see words (or word parts) and immediately say, spell, and write them. In comprehension lessons, teachers orally model tasks which students imitate and practice. As students internalize response modes, teachers phase out prompts. Building on systematic past learning reviews, pupils learn to apply strategies to new situations. Individual mastery tests evaluate pupil performance.

Teachers are trained to four proficiency levels: initial, introductory, intermediate, and proficient. Proficiency is evaluated through a combination of curriculum complexity and teaching efficiency (speed).

High Intensity Learning System

This individualized, diagnostic-prescriptive approach to reading instruction assumes that learning results from time spent on individually appropriate activities. Teachers are instructional managers who keep pupils focused on these activities.

The HILS-II management system provides sequences of instructional objectives and related materials drawn from a wide range of published reading programs. Teachers identify individual pupil needs through diagnostic tests, ensure that pupils understand prescribed objectives, provide personal support, observe pupil progress through individual mastery tests, and move them through the system. Pupils record their own progress.

Teaching preparation focuses on learning management system details, reviewing instructional materials, and becoming efficient in classroom management practices.

Learning to Read Through the Arts

This program uses both a diagnostic-prescriptive and an experiential language arts workshop approach to reading instruction. Pupils alternate between concrete (non-verbal) and abstract (verbal) experiences. In arts workshops, pupils listen to instruction, develop concepts and vocabulary, engage in activities, verbalize about experiences, read, and record observations about different activities. During classroom reading instruction, teachers present directed reading-skill lessons designed to meet needs identified in individual diagnostic tests. Field trips to museums, resource centers, libraries, and cultural institutions are integral to the curriculum.

Classroom and artist-teachers work in teams, sharing lesson plans and observing each others' lessons to coordinate instruction. Reading skills lessons are based on arts workshops. The curriculum is developed through classroom experiences; teacher training is individualized and conducted on-site.

Structured Teaching in the Area of Reading

This curriculum uses a psycholinguistic approach to reading instruction, guiding pupils to use language cues efficiently for understanding. Growth in reading ability is considered a holistic process rather than the acquisition isolated discrete skills. Teachers are trained to distinguish between miscues made by proficient readers which retain the meaning of a passage, and miscues made by inefficient readers which do not make sense.

STAR stresses direct teaching of semantic and syntactic strategies for making sense of written materials. Teachers receive extensive examples of strategy lessons as well as examples of listening comprehension lessons, language experience lessons for non-readers, and teacher-directed comprehension lessons. Although selected published materials are particularly recommended for classroom use, teachers base directed comprehension lessons on a wide range of materials.

OPTIONAL READING PROGRAMS

Nine districts implemented alternative reading curricula in Gates classes; all provide on-going pupil assessment. One program is an adaptation of STAR; another is an adaptation of L.R.A. Two combine

basal reader lessons with individual skills development in a lab setting. One provides basal reader lessons in conjunction with daily instruction on test-taking skills. Four are primarily diagnostic-prescriptive programs.

LANGUAGE ARTS CURRICULUM FOR LIMITED ENGLISH PROFICIENT STUDENTS

Grade Advancement Through Enrichment Skills (GATES), developed by the Office of Bilingual Education, draws on bilingual pupils' strengths in their first language to develop skills in English. GATES teachers use the Language Assessment Management System to identify individual and class needs, and guide planning for instruction. The curriculum emphasizes development of vocabulary and language structures, comprehension, and language skills' integration. While relying heavily on teacher-directed activities, the approach also uses other organizational forms to meet the varied needs of bilingual pupils.

EXEMPLARY MATHEMATICS PROGRAMS

Each of the two exemplary mathematics curricula, Diagnostic-Prescriptive Arithmetic (D.P.A.) and Real Math (R.M.), teaches basic arithmetic skills. They differ from ordinary "back-to-basics" curricula by stressing development of mathematical thinking and providing activity-based instruction. D.P.A. and R.M. share several other features: diagnostic tests for periodic, individual student assessment; a system for recording student progress; and emphasis on games and other activities which reinforce newly-acquired skills.

The format of R.M. resembles traditional programs more closely than does D.P.A. R.M. provides a teacher's guide and student textbooks. D.P.A., on the other hand, can be used with any text selected by the school. R.M. provides a wide range of materials to supplement instruction; D.P.A. provides some of these materials as well as instructions for designing and developing a variety of teacher-generated materials.

OPTIONAL MATHEMATICS PROGRAMS

Ten districts implemented optional mathematics programs (including one exclusively for seventh-grade classes). All include criterion-referenced periodic assessment tests. Each program provides concrete activities which stress problem-solving skills and arithmetic concept development.

Appendix B

DEFINITION OF THE ANALYTIC GROUPINGS USED IN THE ANALYSIS OF STUDENT ACHIEVEMENT

The Office of Educational Evaluation received a computer file with January, 1982 CAT results from the Office of Student Information Services. This file contained 18,276 records. These records, representing students' answer documents, were compared to O.E.E.'s Promotional Gates Program class list, which was the result of an October, 1981 data collection. The January test file was compared to the files for the April and August, 1981 CAT administrations. After combining all these files, 13,373 January answer documents matched either April or August CAT scores below the promotional criteria. This group of 13,373 students is the one whose performance is analyzed in this mid-year report.

The complete disposition of the 18,276 January answer documents is presented in Table B-1. January test results for those students not included in the main body of this report are displayed in Table B-2.

Two groups of students were excluded from the main analytic file. Firt excluded are 1,171 students whose pre-test scores were above the promotional criteria; they achieved January CAT mean grade equivalents of 3.5 and 6.4 in the fourth- and seventh-grade, respectively. As one would expect, these students' mean grade equivalents are substantially equivalent to or slightly higher than those of holdovers included in the analytic file (3.6 and 5.9 for fourth- and seventh-grades, respectively). The second group excluded from the analytic file, 3,379 students without pre-test scores, had January mean grade equivalents (3.3 and 5.5 in the fourth- and seventh-grade, respectively) slightly below those of the students in the analytic file.

There are four reasons for the large number (4,550) of students tested in January who were either matched to pre-test scores above the cut-off or not matched at all. First, completion of the nine-digit student identification number (the basis of O.E.E.'s file matching procedure) on the test answer documents is subject to error. Second, some students tested in January are not holdovers, but receive remedial services in Gates classes as a preventative measure. These students are fourth- and seventh-graders for the first time this year. Third, some students barely passed the promotional examinations in August and were retained in Gates classes for reasons other than their test scores. Finally, some students were tested individually in the fall, 1982, but the central administration has no record of their test scores.

Gates program eligibility status for all these students will be resolved by the year-end report.

TABLE B-1

Disposition of Answer Documents
From the January CAT

Total unduplicated January answer documents		18,276
1. Number matched to valid pre-test scores	13,373	
2. Number matched to pre-test scores which were above the promotional criteria	1,279	
3. Number not matched to any pre-test score	3,624	
Total unduplicated January answer documents		18,276

Group of students with valid pre-test scores		13,373
1. Students tested in January and April	11,362	
2. Students tested in January and August (but not April)	717	
3. Students absent from the January test	1,294	
Total		13,373

TABLE B-2

Results of the January CAT for
Students Not Included in the Analytic File

Students Matched To Pre-Test Scores Which Were Above The Promotional Criteria

Grade	Students Tested in January	Mean G.E.	Students Above January Cut-Off		Students Above April Cut-Off	
			#	%	#	%
Four	970	3.5	95	9.8%	441	45.5%
Seven	201	6.4	60	30.0%	113	56.2%
Total	1,171	--	155	13.2%	554	47.3%

Students Not Matched to Any Pre-Test Score

Grade	Students Tested in January	Mean G.E.	Students Above January Cut-Off		Students Above April Cut-Off	
			#	%	#	%
Four	1,826	3.3	122	6.7%	647	35.4%
Seven	1,553	5.5	226	14.6%	530	34.1%
Total	3,379	--	348	10.3%	1,177	34.8%

Appendix C

TABLES NOT INCLUDED IN THE TEXT

TABLE C-1

January, 1982 CAT Results: Number and Percentage of Gates Holdovers Scoring Above the January Promotional Criteria by District and by Grade

	Grade Four			Grade Seven			Total (Grades 4 & 7)		
District	Number of Holdovers Tested	Holdovers above January Criteria #	%	Number of Holdovers Tested	Holdovers above January Criteria #	%	Number of Holdovers Tested	Holdovers above January Criteria #	%
1	127	6	4.7%	196	53	27.0%	323	59	18.3%
2	89	14	15.7	74	22	29.7	163	36	22.1
3	97	9	9.3	157	44	28.3	254	53	20.9
4	53	3	5.7	103	17	16.5	156	20	12.8
5	117	28	23.9	195	52	26.7	312	80	25.6
6	243	12	4.9	202	31	15.3	445	43	9.7
7	212	20	9.4	340	64	18.8	552	84	15.2
8	161	10	6.2	357	52	14.6	518	62	12.0
9	360	5	1.4	470	57	12.1	830	62	7.5
10	410	39	9.5	533	96	18.0	943	135	14.3
11	87	9	10.3	163	25	15.3	250	34	13.6
12	172	10	5.8	245	40	16.3	417	50	12.0
13	153	11	7.2	224	31	13.8	377	42	11.1
14	165	8	4.8	380	62	16.3	545	70	12.8
15	195	31	15.9	214	26	12.1	409	57	13.9
16	137	6	4.4	169	19	11.2	306	25	8.2
17	256	19	7.4	478	88	18.4	734	107	14.6
18	65	6	9.2	149	31	20.8	214	37	17.3
19	381	37	9.7	406	57	14.0	787	94	11.9
20	85	14	16.5	226	55	24.3	311	69	22.2
21	104	8	7.7	170	30	17.6	274	38	13.9
22	103	10	9.7	103	30	29.1	206	40	19.4
23	145	16	11.0	252	70	27.8	397	86	21.7
24	107	13	12.1	166	25	15.1	273	38	13.9
25	24	3	12.5	35	10	28.6	59	13	22.0
26	11	2	18.2	16	3	18.8	27	5	18.5
27	237	15	6.3	272	67	24.6	509	82	16.1
28	120	12	10.0	123	22	17.9	243	34	14.0
29	132	19	14.4	182	42	23.1	314	61	19.4
30	112	16	14.3	116	23	19.8	228	39	17.1
31	43	4	9.3	171	52	30.4	214	56	26.2
32	209	16	7.7	276	30	10.9	485	46	9.5
IS 227	0	-	-	4	0	0.0	4	0	0.0
City-wide Total	4,912	431	8.8%	7,167	1,326	18.5%	12,079	1,757	14.5%

TABLE C-2

January, 1982 CAT Results: Number and Percentage of Gates Holdovers Scoring Above the April Promotional Criteria by District and by Grade

District	Grade Four			Grade Seven			Total (Grades 4 & 7)		
	Number of Holdovers Tested	Holdovers above April Criterion #	%	Number of Holdovers Tested	Holdovers above April Criterion #	%	Number of Holdovers Tested	Holdovers above April Criteria #	%
1	127	58	45.7%	196	97	49.5%	323	155	48.0%
2	89	62	69.7	74	38	51.4	163	100	61.3
3	97	51	52.6	157	85	54.1	254	136	53.5
4	53	16	30.2	103	40	38.8	156	56	35.9
5	117	68	58.1	195	97	49.7	312	165	52.9
6	243	98	40.3	202	78	38.6	445	176	39.6
7	212	97	45.8	340	150	44.1	552	247	44.7
8	161	78	48.4	357	129	36.1	518	207	40.0
9	360	127	35.3	470	164	34.9	830	291	35.1
10	410	184	44.9	533	229	43.0	943	413	43.8
11	87	39	44.9	163	62	38.0	250	101	40.4
12	172	76	44.2	245	100	40.8	417	176	42.2
13	153	64	41.8	224	83	37.1	377	147	39.0
14	165	73	44.2	380	140	36.8	545	213	39.1
15	195	120	61.5	214	76	35.5	409	196	47.9
16	137	52	38.0	169	63	37.3	306	115	37.6
17	256	123	48.0	478	213	44.6	734	336	45.8
18	65	42	64.6	149	65	43.6	214	107	50.0
19	381	201	52.8	406	152	37.4	787	353	44.9
20	85	45	52.9	226	107	47.3	311	152	48.9
21	104	52	50.0	170	75	44.1	274	127	46.4
22	103	64	62.1	103	51	49.5	206	115	55.8
23	145	75	51.7	252	122	48.4	397	197	49.6
24	107	57	53.3	166	65	39.2	273	122	44.7
25	24	14	58.3	35	22	62.9	59	36	61.0
26	11	7	63.6	16	8	50.0	27	15	55.6
27	237	130	54.9	272	142	52.2	509	272	53.4
28	120	59	49.2	123	54	43.9	243	113	46.5
29	132	77	58.3	182	90	49.5	314	167	53.2
30	112	59	52.7	116	52	44.8	228	111	48.7
31	43	21	48.8	171	99	57.9	214	120	56.1
32	209	97	46.4	276	94	34.1	485	191	39.4
I.S. 227	-	-	-	4	1	25.0	4	1	25.0
Citywide Total	4,912	2,386	48.6%	7,167	3,043	42.5%	12,079	5,429	44.9%

TABLE C-3

Mean Gains of Fourth- and Seventh-Grade Holdovers with April, 1981 and January, 1982 CAT Scores, by District

	Grade Four		Grade Seven	
District	# Tested	Mean Gain*	# Tested	Mean Gain*
1	126	0.5	195	1.0
2	85	0.9	71	0.8
3	90	0.7	154	1.4
4	52	0.3	97	0.7
5	110	1.0	185	1.0
6	226	0.6	198	0.9
7	204	0.5	329	0.9
8	157	0.6	336	0.8
9	335	0.4	443	0.6
10	363	0.6	505	0.9
11	78	0.7	159	0.9
12	166	0.5	242	0.6
13	128	0.5	186	0.8
14	159	0.5	367	0.6
15	156	0.7	189	0.4
16	136	0.5	164	0.7
17	244	0.6	468	0.9
18	61	0.7	139	1.0
19	353	0.8	382	0.8
20	78	0.9	214	1.0
21	95	0.7	155	0.6
22	99	0.7	97	1.3
23	125	0.7	241	1.2
24	96	0.8	155	0.8
25	22	0.8	30	1.4
26	11	1.0	14	1.0
27	211	0.8	240	1.3
28	113	0.6	115	0.7
29	125	0.8	181	0.9
30	107	0.8	109	0.9
31	43	0.5	169	1.1
32	191	0.6	274	0.7
I.S.227	-	-	4	0.5

*Mean gains are expressed in grade equivalents. The unit of measurement is one year; months are expressed as tenths of a unit.

TABLE C-4

Distribution of April, 1981 CAT Pre-test Scores for Fourth-Grade Holdovers Scoring Above and Below End-of-Year Promotional Criteria

Students Who Scored Above April Criteria			Students Who Scored Below April Criteria		
April G.E.*	N	%	April G.E.*	N	%
1.3	4	0.2	1.3	8	0.3
1.4	3	0.1	1.4	10	0.4
1.5	1	0.0	1.5	3	0.1
1.6	6	0.3	1.6	15	0.6
1.7	9	0.4	1.7	29	1.3
1.8	18	0.8	1.8	28	1.2
1.9	45	2.0	1.9	62	2.7
2.0	1	0.0	2.0	3	0.1
2.1	43	1.9	2.1	81	3.5
2.2	57	2.6	2.2	108	4.7
2.3	2	0.1	2.3	1	0.0
2.4	85	3.8	2.4	136	5.9
2.5	102	4.6	2.5	197	8.5
2.7	155	7.0	2.7	212	9.1
2.8	169	7.6	2.8	235	10.1
3.0	210	9.4	3.0	217	9.4
3.2	243	10.9	3.2	243	10.5
3.3	256	11.5	3.3	244	10.5
3.4	306	13.7	3.4	185	8.0
3.5	291	13.1	3.5	161	6.9
3.6	233	10.0	3.6	138	6.0
TOTAL	2,229	100.0	TOTAL	2,316	100.0

*Scores are expressed in grade equivalents. The unit of measurement is one year; months are expressed as tenths of a unit.

TABLE C-5

Distribution of April, 1981 CAT Pre-test Scores for Seventh-Grade Holdovers Scoring Above and Below End-of-Year Promotional Criteria

Students Who Scored Above April Criteria			Students Who Scored Below April Criteria		
April G.E. *	N	%	April G.E.*	N	%
2.0	3	0.1	2.0	33	0.8
2.1	1	0.0	2.1	2	0.1
2.2	2	0.1	2.2	1	0.0
2.3	2	0.1	2.3	21	0.5
2.5	1	0.0	2.4	2	0.1
2.6	1	0.0	2.5	24	0.6
2.7	6	0.2	2.6	2	0.1
3.0	12	0.4	2.7	42	1.1
3.3	22	0.8	3.0	70	1.8
3.5	42	1.5	3.3	83	2.1
3.7	51	1.8	3.5	128	3.3
3.9	55	1.9	3.7	159	4.1
4.1	93	3.2	3.9	204	5.2
4.3	114	3.9	4.1	247	6.3
4.6	138	4.8	4.3	281	7.2
4.8	213	7.4	4.4	1	0.0
5.0	233	8.0	4.6	297	7.6
5.2	274	9.5	4.8	300	7.7
5.5	310	10.7	5.0	304	7.8
5.7	345	11.9	5.2	321	8.2
5.9	650	22.4	5.5	278	7.1
6.1	326	11.3	5.7	241	6.2
TOTAL	2,894	100.0	5.9	700	17.9
			6.1	171	4.4
			TOTAL	3,912	100.0

*Scores are expressed in grade equivalents. The unit of measurement is one year; months are expressed as tenths of a unit.

Appendix D

STATISTICAL ADJUSTMENT OF PRE-TEST SCORES
TO ACCOUNT FOR REGRESSION TO THE MEAN

The equation used to adjust pre-test scores to account for the regression effect is taken from A.O.H. Roberts, "Regression Toward the Mean and the Regression Effect Bias" in New Directions for Testing and Measurement, Number 8, 1980, (San Francisco, Jossey-Bass), pages 59-82. The equation is:

$$\bar{X}cs = \bar{X}s + \frac{\sigma^2}{s^2}(1 - \rho_{xx})(\bar{X}g - \bar{X}s)$$

Where, given the April, 1981 administration of the California Achievement Test (Reading), Form D:

		Grade 4	Grade 7
$\bar{X}cs$	= corrected pre-test mean of program participants	*	*
$\bar{X}s$	= pre-test mean of program participants.....	3.0	5.0
$\bar{X}g$	= citywide mean on pre-test**.....	4.8	7.6
σ	= standard deviation of pre-test scores nationally	1.99	2.72
s	= standard deviation of pre-test scores citywide..	1.63	2.37
ρ	= coefficient of reliability	0.84	0.86

*These values are computed on the following page.

**These mean scores include all students tested. They differ slightly from those reported in the 1981 edition of "New York City Public Schools Pupil Reading Achievement," which excludes special education students and the results of make-up tests.

Using the formula and values from the previous page, the computation of regression adjustment for Gates students tested in April, 1981 and January, 1982 is:

Grade Four

where $\bar{X}s = 3.0$; $\bar{X}g = 4.8$; $\sigma = 1.99$; $s = 1.63$; and, $\rho_{xx} = .84$

$$\bar{X}cs = 3.0 + \frac{1.99^2}{1.63^2}(1 - .84)(4.80 - 3.0)$$

$$\bar{X}cs = 3.0 + (1.49)(1 - .84)(4.80 - 3.0)$$

$$\bar{X}cs = 3.0 + (1.49)(.16)(1.8)$$

$$\bar{X}cs = 3.0 + .429$$

$$\bar{X}cs = 3.4$$

Grade Seven

where $\bar{X}s = 5.0$; $\bar{X}g = 7.6$; $\sigma = 2.72$; $s = 2.37$; and, $\rho_{xx} = .86$

$$\bar{X}cs = 5.0 + \frac{2.72^2}{2.37^2}(1 - .86)(7.6 - 5.0)$$

$$\bar{X}cs = 5.0 + (1.317)(1 - .86)(7.6 - 5.0)$$

$$\bar{X}cs = 5.0 + (1.317)(.14)(2.6)$$

$$\bar{X}cs = 5.0 + .479$$

$$\bar{X}cs = 5.5$$